CLAIMS

What is claimed is:

1. A system that provides user specific beams in a fixed beam network, the fixed beam network comprising a plurality of fixed beams, each of the plurality of fixed beams being defined by a plurality of fixed beam correlation coefficients, the system comprising:

a device that computes reception correlation data for a received signal; and

a beamformer that is adapted to determine transmission weighting coefficients to be applied to a return signal based on the difference between the reception correlation data and the fixed beam weighting coefficients associated with at least one of the plurality of fixed beams.

2. The system set forth in claim 1, comprising a device that identifies one of the plurality of common phase reference signals, the fixed beam weighting coefficients of which are to be used in determining the transmission weighting coefficients for a return transmission.

3. The system set forth in claim 1, wherein the system comprises at least a portion of a cellular telephone base station.

4. The system set forth in claim 1, wherein the transmission weighting coefficients are computed according the formula $v_o = \frac{1}{\kappa} W\left(I + j(Q_1 + \gamma I)^{-1} Q_2\right) X \overline{p}^{*}$.

5. The system set forth in claim 1, wherein each of the fixed beams is associated with a common phase reference.

6. The system set forth in claim 5, wherein each of the common phase references comprises a secondary common pilot channel (S-CPICH).

7. The system set forth in claim 1, wherein the transmission weighting coefficients may be expressed as a weighting matrix.

8. A mobile transceiver, comprising:

a device that receives phase reference signal data from a base station, the phase reference signal data being indicative of a first phase reference signal and a second phase reference signal that may be used by the mobile transceiver during a communication session; and

a device that determines whether the second phase reference signal is likely to provide improved reception between the base station and the mobile transceiver with respect to the first phase reference signal and that transmits data to the base station, the data being indicative of whether the first phase reference signal or the second phase reference signal is likely to provide improved reception between the base station and the mobile transceiver.

9. The mobile transceiver set forth in claim 8, wherein the mobile transceiver comprises a cellular telephone handset.

10. The mobile transceiver set forth in claim 8, wherein the data that is indicative of whether the first phase reference signal or the second phase reference signal is likely to provide improved reception between the base station and the mobile transceiver is transmitted to the base station as a single feedback bit of information.

11. The mobile transceiver set forth in claim 8, wherein the data that is indicative of whether the first phase reference signal or the second phase reference signal is likely to provide improved reception between the base station and the mobile transceiver is transmitted to the base station during each slot in which the mobile transceiver transmits information to the base station.

12. A method for providing user specific beams in a fixed beam network, the fixed beam network comprising a plurality of fixed beams, each of the plurality of fixed beams being defined by a plurality of fixed beam correlation coefficients, the method comprising the acts of:

computing reception correlation data for a received signal; and

determining transmission weighting coefficients to be applied to a return signal based on the difference between the reception correlation data and the fixed beam weighting coefficients associated with at least one of the plurality of fixed beams.

13. The method set forth in claim 12, comprising the act of identifying one of the plurality of fixed beams, the fixed beam weighting coefficients of which are to be used in determining the transmission weighting coefficients for a return transmission.

14. The method set forth in claim 12, comprising the act of calculating the transmission weighting coefficients according the formula

$$v_o = \frac{1}{\kappa} W\left(I + j(Q_1 + \gamma I)^{-1} Q_2\right) X \overline{p}^* .$$

15. The method set forth in claim 12, comprising the act of defining each of the fixed beams to be associated with a common phase reference.

16. The method set forth in claim 15, comprising the act of defining each of the common phase references to comprise a secondary common pilot channel (S-CPICH).

17. The method set forth in claim 12, comprising the act of expressing the transmission weighting coefficients as a weighting matrix.

18. A method of identifying a beam from among a plurality of fixed beams in a fixed beam network, the method comprising the acts of:

receiving phase reference signal data, the phase reference signal data being indicative of a first phase reference signal and a second phase reference signal that may be used during a communication session, each of the first phase reference signal and the second phase reference signals being associated with a different one of the plurality of fixed beams;

determining whether beam corresponding to the second phase reference signal is likely to provide improved signal reception during a communication

session with respect to the beam corresponding to the first phase reference signal; and

transmitting data indicative of whether the beam corresponding to the first phase reference signal or the beam corresponding to the second phase reference signal is likely to provide improved reception during the communication session.

19. The method set forth in claim 18, comprising the act of transmitting a single bit of feedback data indicative of whether the first phase reference signal or the second phase reference signal is likely to provide improved reception.

20. The method set forth in claim 18, comprising the act of transmitting the data that is indicative of whether the first phase reference signal or the second phase reference signal is likely to provide improved reception to the base station during each slot in which information is transmitted.